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ABSTRACT

A major theme of this series of papers is the need to build evaluation and experimentation as a component part of educational planning. This paper addresses the structure of the evaluation and experimentation component in a country and the training of evaluators. The training discussion includes the possible modes of training--on-the-job training, tailor-made international intensive training courses, regional and national training courses, short-term academic training, and study leaves--as well as the cost of typical evaluation projects. (Author/IRT)

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IIEP seminar paper: (8)

THE TRAINING OF EXPERTISE

T.N. Postlethwaite

A contribution to the IIEP Seminar on: "The evaluation of the qualitative aspects of education"
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Evaluation and experimentation as a component part of educational planning

One major theme of the preceding papers has been the need to build in evaluation and experimentation as a component part of educational planning. To recapitulate some of the examples of the types of questions where evaluation and experimentation can shed light:

- Are the revised or new curriculum materials 'working' with the students for whom they are intended, in the sense that the students are achieving the learning objectives? If not, what are the weak points in what is being attained by which students?
- Is there a systematic increase over time of student achievement including practical subjects)? Is this equal for all sub-groups of students in different schools in different regions within the country? If inequalities exist, where do they exist?
- Are the objectives of teacher education courses being attained by all students? If not, why not? What remedial measures can be taken?
- Are the teacher behaviours taught in teacher education having a positive effect on cognitive learning, affective learning, etc., in the persons taught by those teachers? If not, are there other behaviours which should be taught? If so, which?

The answers to questions such as the above are important for planners in any system of education and help in the reallocation of resources. They can improve understanding of the way in which the various factors (input and process into the educational system) interact with each other so that improvements can be gained through the manipulation of such variables. Different models of evaluation and experimentation have already been given in some of the preceding papers. We recommend that donor agencies build evaluation and experimentation into its future projects to the extent possible for the good of the recipient country (as well as the donor agency) and that the donor agency and the recipient be willing to allocate such resources in order that systematically designed experiment and evaluation can be undertaken. In this way all parties can learn from differing educational practices. Indeed, if evaluation data exist in countries, the donor agency's identification of the weak aspects in need of support will be an easier task. Furthermore, considering the large percentage of the GNP and National Budget which is spent on education in most developing countries, it

is almost inconceivable that little systematic effort in evaluation of education has been undertaken. Given the 'state of the art' in evaluation, it would be feasible to introduce evaluation at relatively small cost in most developing countries.

There are several examples of large-scale evaluation and experimentation in developed countries and some in developing countries. The International Association for the Evaluation of Educational Achievement (IEA) has recently terminated a co-operative international project involving six subject areas at three different levels of education in each of 23 countries. Four of these countries were developing countries. The procedures for evaluation have been well tested over several decades. The quicker such evaluation and experimentation procedures can be implemented under the auspices of the national ministries of education, for the benefit of their own systems of education, the better. Just as one author has shown that there are many dangers in implanting in one country a curriculum developed in another, so there are dangers in taking instrumentation for evaluation purposes from one country to another. It is the evaluators and experimenters within each country who must develop instruments relevant to the needs of their own projects in their own cultures.

1. EVALUATION AND EXPERIMENTATION STRUCTURES

The competencies required to undertake such evaluation work could be collected within one central unit (for example within the Ministry of Education) or relevant planning organisation, or within a university, or in an independent organisation. Which location within the education system is optimal will depend to a large extent on the existing structures and where the competencies are currently found.

The evaluation-experimentation component would have two major functions:

(a) The systematic monitoring of the 'efficiency' of the educational system, in particular (i) student learning outcomes, measurable changes in student behaviours at various points in the educational system; and (ii) structural criteria (financial, demographic, growth and change, etc.) and societal impacts (particularly as regards student placement in the job market, changes in productivity levels, etc.).

(b) Experimentation with and evaluation of methods of teaching, curricular materials, instructional processes, etc. to determine their 'workability' before implementation is undertaken.

The monitoring of the system as a whole and the evaluation of innovations before implementation will both generate information which can be of great help in further decision-making in the system. It is essential that links between the evaluators and the policy-makers be built and maintained. One of the critical tasks in the setting-up of such experimentation and evaluation components will be that of convincing senior officials in the appropriate ministries of the need for such work.

The structure of such experimentation-evaluation units, as mentioned above, will depend on existing structures within the system. Appendix I to this paper presents a series of comments on the way in which research centres dealing with evaluation and experimentation have evolved, the sources of demand for research, and the different structures of such centres.

The word research is used in Appendix I simply because it is the general term which has been used to denote, inter alia, the experimentation and evaluation aspects of educational assessment. The structures of the existing research competencies and units clearly vary from country to country. There would seem to be little use in a donor agency helping isolated individuals unless the basic number of personnel were brought together in a small unit with the 'appropriate' relationships with the country's Ministry of Education and Planning. The major options include: improving existing structures, creating new units with specialised functions and, in some cases, using foreign personnel for short-term periods.

For any proposed project for funding in a developing country, the donor's appraisal should, as a matter of routine, investigate the needs, feasibility, resources available, and possibly existing structures for evaluation, and propose the type of evaluation and experimentation unit to be set up.

The extent to which the structure is centralized will be an issue. In general if no unit exists our recommendation would be to have a centralized unit placed within the Ministry of Education. Such a centralized unit would include structures concerned with curriculum development, teacher education, and all aspects of evaluation. We are aware of the arguments of certain researchers that the research unit should be independent of the policy-making structure, but our experience does not support this view. If the policy-makers wish to take evaluation seriously they will; if not, not. The important criteria are that the unit should have effective communication with the various levels of policy-makers, the ability to collect the required data from the schools and

students, and the ability and wherewithal to process and analyse the data. This in turn presupposes that there will be adequate financing for a small nucleus of staff and good physical facilities. Donor agencies should support the structure in such a way that it would survive long after the donor agency had finished its work there. This survival will depend to some extent on the recruitment undertaken, the way in which the career pattern fits into the structure, the intrinsic interest in the work, etc.

The relationship of the evaluation and experimentation unit to the curriculum development centre, the examinations unit, and teacher training will be of prime importance to the functioning of the education system. All that can be done at this point is to raise the issues.

2. THE TRAINING OF EVALUATORS

The main aim of this section is to outline various approaches to the training of evaluators in developing countries - an activity which is, as yet, weak in these countries. The training of evaluators must be recognised, both by donor agencies and the recipient country, as one of the priority areas for technical assistance. In the majority of countries, there is at least one person with knowledge of, and engagement in, evaluation. Such personnel who can participate in training should be identified, their own additional training needs should be specified, and the approaches to training planned.

2.1 General situation

There is in general a lack of trained evaluators in developing countries, but the situation varies from country to country. If one takes developing countries as a whole, it would appear that the actual experience in, and knowledge of, evaluation (in all its many aspects) is limited. There are certain characteristics of evaluation personnel in which different countries vary. The more important characteristics are:

(i) The number of persons involved in evaluation work;

(ii) The qualifications and the amount of experience of the persons involved in evaluation work.

(iii) Placement of educational evaluators. In general persons with evaluation competence tend to be widely scattered in developing countries. This scattering is associated with a lack of systematic and co-ordinated evaluation work.

(iv) The nature of the experimentation and evaluation activities in which evaluation personnel are engaged.

All these different characteristics can be identified for each country and will help determine the type of training programmes required.

2.2 Possible modes of training

The needs of persons to be trained will differ somewhat from country to country and from time to time. One should perhaps think of training at two levels: simple and complex. Certain routine aspects of evaluation (e.g. the evaluation of the first and second try-outs of new curriculum materials) are elementary. Other aspects require a great deal of knowledge in research design, sampling, statistical analysis, etc., on the part of the evaluation leaders in each country. Unfortunately, those with more advanced knowledge but with little experience sometimes 'use a sledgehammer to crack a nut'. This tendency must be avoided.

Let us consider the following training models:

1. On-the-job training;
2. Tailor-made international intensive training courses;
3. Regional and national training courses;
4. Short-term academic training;
5. Study leaves.

2.21 On-the-job training. One of the quickest ways of improving the evaluation competency of a group is to require that they accomplish certain tasks within a certain time limit. But the tasks must be highly specific (e.g. construct a test to measure the science achievement of 8th graders, or draw a probability sample of pupils aged 10 in the public system of education). An example of this model has occurred in the course of the IEA co-operative form of research, which increased the overall competency considerably in many national research centres in this way. Each IEA national researcher had to go through a series of steps: identification of target populations, content analyses of textbooks, item writing, pre-testing of items on specially selected judgement samples, item analysis, drawing of probability samples of schools and students in target populations, identification and measuring of critical

social variables, translation and printing of all tests, briefing of testers, data collection, coding, data recording, interpretation of analyses, etc.

Each national technical officer and his assistants had thus to carry out in detail each step in the evaluation process for the national system in his own country.

Another form of on-the-job training is to have a specific project begun, and for the donor agency to supply the appropriate technical assistance either for the period of the project or at regular intervals throughout the project. The technical assistants would have to be hand-picked. The selection mechanism might pose a problem. What is important in this type of training is that the group of evaluators remains the same from the conceptualisation of the project through the interpretation of the results and write-up. One difficulty of this type of training is that for more complex data the computer facilities and/or programming personnel may not be available in developing countries whereas in the IEA type of activity the data processing would be undertaken internationally. In each case the bulk of the financing should come from the individual nation.

2.22 Tailor-made international intensive courses. Intensive courses at an international centre can be useful provided that the course is geared closely to the needs of the participants. In several instances, persons with virtually no knowledge or experience of evaluation have attended international courses and upon return to their countries have initiated evaluation activities which within two or three years became the mechanism for undertaking major work in education system monitoring and assessment. This type of development can readily be brought about in developing countries. In many ways it should be easier when there is less tradition to be overcome.

An example of the rationale and timetable of an intensive course given by the International Institute for Educational Planning (IIEP) is presented in Appendix II. Universities and testing agencies also provide training courses in evaluation. The total cost of such courses can run to $90,000 (35 persons) where all costs are borne by the sponsoring agency.

2.23 Regional and national training courses. Again, these courses should be tailor-made to meet the needs of the participants. The advantage of regional courses is that they will cost less, and the evaluators in a region will get to know each other's work and can set up a collaborative

network. Such courses could be of 4-6 week's duration with as many faculty members as possible being drawn from the region itself.

2.24 Short- and long-term academic training

For short-term training, it might be beneficial in several countries to identify persons who will become leaders in evaluation in their own countries and offer them training. Such personnel should be selected in terms of their interest (e.g. teacher effectiveness evaluation, curriculum evaluation, survey evaluation, advanced statistical analysis, etc.) for the formation of groups of some 10-25 persons from various countries. Each group would have one or two intensive courses of three or six months' duration at one or two selected academic institutions.

For long-term training, it has been common practice in past decades for evaluation specialists to attend universities in other countries. They attend for a three- or four-year period for their graduate work, there being no possibility of graduate work in their own country. In many ways it would be of more practical value to have students train at a foreign university for short periods interspersed by longer periods of field work in their own countries.

To this end it is anticipated that one or two universities will be selected which can offer programmes of three to four months' duration each year for a period of three to four years. Although these programmes could lead to advanced degrees, the main thrust of the work would be found in the country of origin.

2.25 Study leave abroad

For certain senior evaluators it would not be necessary to have further academic training, but it would be desirable for them to gain knowledge on how the problems they are facing are dealt with in practice in other countries. It is suggested that individuals would have study leave of a few weeks' duration to visit several evaluation centres known to have made progress in the particular areas of immediate importance to the centre concerned in order to observe the methods of evaluation elsewhere.

2.3 Levels of expertise and existing resources

Many persons make a distinction between simple and complex types of evaluation. Perhaps the simple type should be learned by on-the-job training and national regional seminars, the more complex being reserved for other forms of training. The more complex training would have to be more subject-matter

anchored; e.g. teaching effectiveness research would have to be a specialised course. It is difficult to see the borderline between the two clearly at this point, but this should become clearer as experience with training proceeds.

3. EVALUATION COSTS OF TYPICAL PROJECTS

No reference has yet been made to the costs of carrying out any one evaluation of a particular project. Clearly the costs will vary from project to project, depending on local conditions and the size and complexity of the project. Below we have described three different types of evaluation of three different projects each of which might be regarded as typical. We show the timetable, the competencies required and the personnel man-months.

3.1 Project 1. Summative evaluation

Let us assume that a summative evaluation is required of a specific vocational training programme which is operating in 100 schools in a developing country. The curriculum would be well established, but the test constructors would have had little experience of the vocational subject curriculum and no experience of developing tests in that subject. Testing would be carried out in some 40-50 schools with about 2,000 students in the sample involving data collection on input process and output data. This would yield a considerable volume of data. The analyses will include multivariate analyses, and hence it will not be feasible to have the data analysed by hand. It is recommended that a computer be used, and this implies periodic access to a computer system. (As a general point, it should be stated that small computer facilities already exist in developing countries, and often they are under-utilized. The critical consideration is that the hardware be powerful enough to allow programming in a high level language such as FORTRAN or ALGOL. This kind of facility enables evaluation units to develop their own computer programmes, and to take advantage of the many packages created to do this sort of work in various centres around the world.)

One member of the evaluation unit will act as project director.

The timetable will be as follows:

	Time in months
Construction of tests and instruments (including pre-testing)	Month 0
Drawing of sample	↓
Printing of tests	
Administration of tests	Month 6
Coding and recording of data	Month 7
Statistical analysis	Months 8-9
Intepretation of results and write-up	Months 10-12

The competencies required will be:

(a) test and scale construction
(b) sampling theory application
(c) statistical analysis
(d) data processing

The persons required together with the time in man-months (mm) will be:

Professional

(a) 1 test constructor (2 mm)
(b) 1 curriculum consultant (2 mm)
(c) 1 scale and questionnaire constructor (2 mm)
(d) 8 test administrators (2 mm)
(e) 1 data processor (8 mm)
(f) 1 statistician (1 mm)
Total: 17 man-months

Other

(g) 2 coders (1 mm)
(h) 1 secretary (12 mm)
Total: 13 man-months

3.2 Project 2. Formative evaluation of curriculum material

The plan of formative evaluation is based on the assumption that a curriculum team has prepared a draft of new instructional material. This draft has been produced in sufficient number of copies and tried out in a sample of approximately eight classes selected on judgemental basis in such a way that it represents the student population for which the programme has been prepared.

The responsibility of the evaluators will be to collect data during the try out of the material, to summarize the data, and to formulate suggestions if needed, for the modification of the programme.

The timetable of such activity is bound to the timetable prescribed for the try out of the material. It is assumed that a course will be taught during a full school year, i.e., during ten months. Evaluation activities should start two months before the actual try out starts, continue during ten months of the teaching period, and then continue for two additional months after finishing the try out.

The plan is prepared for a course which is taught during a whole school year to an extent of five periods in a week. Such a course would correspond to a one-year course in one of the major subjects taught in school, such as mother tongue, science, or practical agriculture.

The timetable will be as follows:

	Time in months
Contacting schools	Month 0 ↓ Month 2
Construction of 7 formative evaluation instruments (approximately 7x40 items)	Month 3
Visiting schools	↓
Administration of tests	Month 10
Interpretation of results	Months 11-12

The competencies required will be:

(a) test construction

(b) experience in teaching

The persons required with the time in man-months (mm) will be:

Professional

(a) 1 test constructor (7 mm)

(b) 1 teacher (2 mm)

(c) 1 student in teacher training institute or University Department of Psychology (5 mm)

Total: 14 man-months

Other

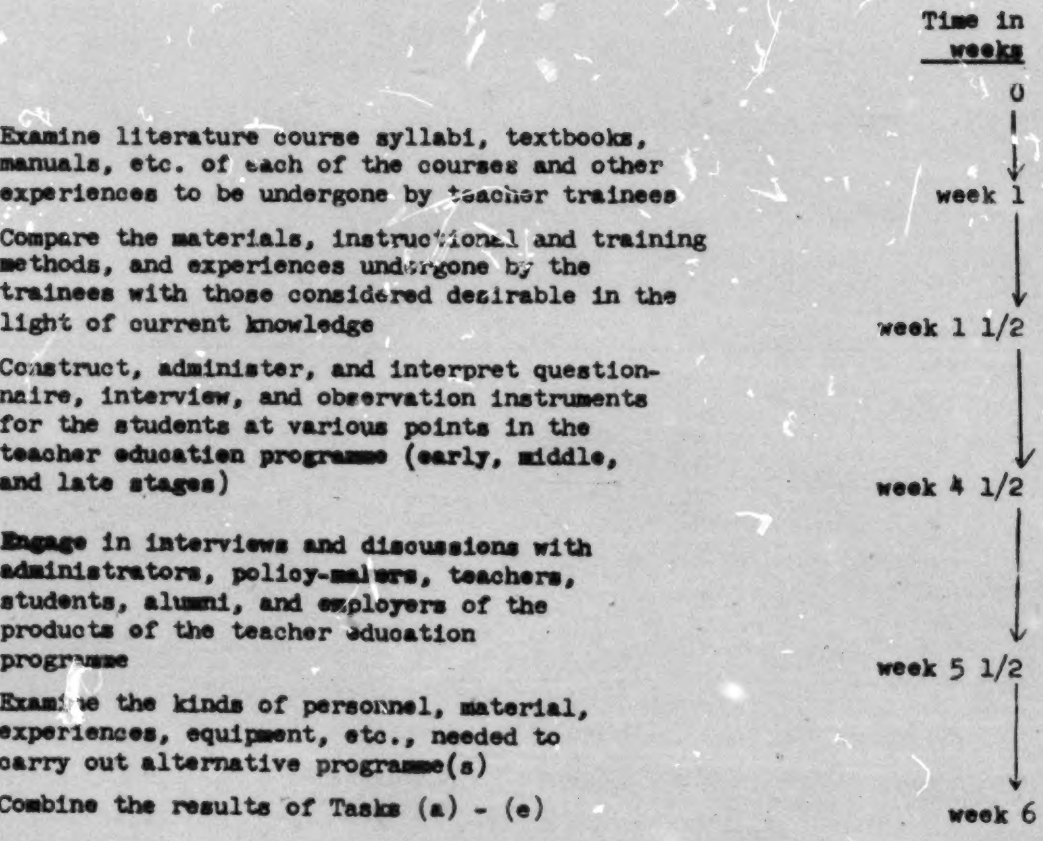
(d) Clerical assistance (16 mm)

Total: 16 man-months

3.3 Project 3. Formative evaluation of teacher education programme(s)

The purposes of the proposed formative evaluation of a teacher education programme would be to determine: (a) the objectives of the programme, (b) their appropriateness in the light of current knowledge concerning teacher education and teacher effectiveness, (c) the degree to which the objectives are being achieved, (d) the degree to which specific other objectives are desirable and feasible, and (e) the estimated cost of installing a programme that would achieve more desirable objectives. Finally the project would eventuate in (f) recommendations.

The methods that would be used to achieve each of the aforementioned purposes are indicated below along with estimated of the competencies and man-months needed.


Time in weeks
0
Examine literature course syllabi, textbooks, manuals, etc. of each of the courses and other experiences to be undergone by teacher trainees
week 1
Compare the materials, instructional and training methods, and experiences undergone by the trainees with those considered desirable in the light of current knowledge
week 1 1/2
Construct, administer, and interpret questionnaire, interview, and observation instruments for the students at various points in the teacher education programme (early, middle, and late stages)
week 4 1/2
Engage in interviews and discussions with administrators, policy-makers, teachers, students, alumni, and employers of the products of the teacher education programme
week 5 1/2
Examine the kinds of personnel, material, experiences, equipment, etc., needed to carry out alternative programme(s)
Combine the results of Tasks (a) - (e)
week 6

The competencies required will be:

(a) experience in the theory, research literature, and practical phases of teacher education.

(b) evaluation

The persons required with the time in man-weeks (mw) will be:

Professional

(a) specialist in teacher education planning and programming (6 mw)

(b) 2 graduate-student assistants in evaluation (8 1/2 mw)

Total: 14 1/2 man-weeks

Other

(c) clerical assistance (12 mw)

Total: 12 man-weeks

4. **Prospects**

The extent to which in-built evaluation needs to be encouraged will vary somewhat from country to country. The support required for the accompanying structures will also vary. The need for training is great but the modes of increasing competence in evaluations are manifold.

What are the priorities which donor agencies give to these problems and what mechanisms can they employ to encourage and build up such evaluation?

APPENDIXES

APPENDIX I

COMMENTS ON THE ESTABLISHMENT OF EXPERIMENTAL-EVALUATION UNITS

Although the following describes the establishment to date of research centres, it is hoped that donor agencies might be able to cut many corners and establish a central co-ordinating and/or executing centre rapidly.

Yates (The Role of Educational Research in Educational Change, Pacific Books, 1971) suggested that a typical development of educational research organisations seems to have included the following :

(a) the enterprise was founded by individuals, who for the most part worked within the universities with little or no financial support;

(b) the universities then granted some recognition, often sparse and grudging;

(c) after some demonstrated success, governments and government departments recognized the potential value of educational research and began to allocate public funds to support projects, proposed to be carried out by individuals or teams within universities;

(d) at that point, the university departments either grew into large educational research units or separate research institutes were formed.

There are some notable exceptions where the universities have played a relatively minor role (e.g. the Federal Republic of Germany and the USSR) but in general the pattern for developing countries has been that the research institutes evolved in the way described by Yates.

The question arises as to how to institute educational research quickly in developing countries with relatively under-developed educational research activities within the universities. The need is felt to develop school systems and the accompanying evaluation as rapidly as possible, capitalizing on the experience of developed countries, whereby ten years' progress can be made in perhaps two years for the particular developing country. Whether or not this is a viable proposition is unsure. In many cases there is no tradition of data collection: there are extremely few trained and qualified research staff: where the research staff is trained it quite often consists of young persons who have been abroad and have not

yet the necessary educational status within their own countries to be able to lead educational research. As mentioned above, the older educational statesmen often do not understand educational research and it is often difficult for such groups to work harmoniously together. In some cases, there are blatant examples of nepotism, whereby unqualified persons are put into senior positions. There are problems vis-à-vis the existing university staff in terms of status: should the educational researchers have equal comparable status or should they have a higher status since the research required by the government needs the best possible people trained in the subject in the country.

Some institutions have initially undertaken the collection of educational census data or some very small pilot projects, or both. It would appear that those institutions which have proved to be successful have from the very inception had certain delimited and specified goals to achieve, whereas those which have been relatively unsuccessful have often been created for the purpose of educational research without there being any immediate specified goals for them to aim at.

a) Source of demand for research

Educational research has been initiated by governments, by universities, by private centers and foundations and by individuals.

In some cases, the government will establish an institution or center to carry out the education research. In this case, the educational center is financed completely by the government and certain statutory controls are employed. In some cases, the center for research might be within the ministry of education or in another governmental department where other social sciences related to education may be undertaking more educational work than other domains (e.g. sociology, economics, demography, etc.). The center may be located within a university, usually, but not always, where the university is a State one.

In some cases, the ministry of education or other governmental departments will create a 'bureau' or unit within the ministry or department, in order to distribute funds for research projects to universities and research institutions whether they be State or private. In some countries, the bureaux have an elaborate system for identifying the priorities to be given to particular aspects of the research. In Sweden, for example, the bureau within the National Board of Education, asks the other departments within the National Board of Education for their suggestions for research priorities for the next five years. Once these priorities have been put into some

sort of systematic form, they are made as suggestions to the universities and other research institutes in Sweden, asking for comments on these priorities, as well as suggestions for other types of research and how these would fit into the present priority structure. Again the bureau will ask certain individuals, known for their wisdom and perception in education, to give their suggestions for priorities for research over a five, or in some cases a ten-year period. All of these suggestions are then sifted by the senior members of the bureau and finally brought into a priority list which then goes before the senior members of the whole of the National Board of Education. The National Board of Education at this point can make suggestions for the financial distribution for the coming year, and at the same time, make modifications for the estimated budgets for the coming years and for the amount of money for the bureau's expenditures.

This, of course, is a very rational approach and in other cases the priorities for research are often left to one or two members of a bureau within a ministry, with very few controls upon them, except that they have a fixed budget within which to work. In yet other cases, a bureau within a department may consist of only one or two persons, and in certain countries there is no fixed budget for research, and the bureau has to negotiate the amount for each research project, or even each item of expenditure within a research project.

It is perhaps worth pointing out at this time that there is a tradition in certain countries not to have budgets too well specified, the suggestion being that when a budget is specified, this will jeopardize the possibility of having increased funds at a later time. This may appear to be an irrational procedure but it does have certain advantages within certain cultural or power structures. Where the ability to obtain funds depends on the personality and connexions of an individual, he often feels that his obtaining of funds should be relatively secret and not open to attack from his competitors.

Certain grant-giving agencies and bureaux have begun the idea of sequenced budgeting, i.e. step one is clearly defined, step two is less well defined and step three even less well defined. However, it is recognized that the details of step two will depend upon step one and therefore an adjusted budget for step two with a more specific plan will be submitted at the end of step one. However, an initial allocation is made for the total amount of money for all three steps (which is, of course, only a global estimate). (cf. American Educational Research Journal, Vol. 7, No. 3, May 1970).

b) Government creates outside agencies

It is possible for a government or ministry to establish an outside agency (i.e., not within the government) which has the responsibility for deciding priorities of research and educational innovation in general, and the distribution of funds for those projects. The body itself rarely carries out research. An example of this would be the Schools' Council in England and Wales. In some cases, a government department will independently undertake research on particular problems that concern the school system. For example, a department of labour (Canada) has undertaken a long study of secondary school students and their choices for employment. A planning department in another country (France) has undertaken a very large scale research project that has had as its object the decisions on the implementation of the university structure in the country and the distribution of university students, over a long period of time. These research projects are seldom handled in close connexion with departments of education and have in some circumstances interfered with educational research institution programmes. In general they have utilized larger scale resources than are available to the educational research institutions that might have been connected with the on-going educational research in the country. The general problems of co-ordination in such cases have, as far as can be seen, never been faced.

c) Universities and similar institutions having research units

It is quite common for university departments or faculties (e.g., education departments and faculties of social science) to have their own research programmes which the members of the faculty usually decide conjointly, and then seek finance from either the university itself or from outside sources, e.g., grant-giving agencies of one kind or another. As will be mentioned later, one of the big difficulties of many independent researches is to avoid duplication.

In some cases, an institute of research will be loosely attached to the university (e.g., the Ethno-sociological Institute in the Ivory Coast and the University of Abidjan). In this case the institute is usually supported from outside sources with perhaps the university covering only the overheads.

d) Private research centres and foundations

Certain research foundations have been created which are independent bodies, i.e., independent of the government, although they will have government representation on their governing bodies. Such institutions as the Australian Council for Educational Research (ACER), the National Foundation for Educational Research (NFER), Scottish Council for Research in Education (SCRE), and the New Zealand Council for Educational Research (NZCER), are examples of this. Their money comes mainly from local educational authorities, government grants and grant-giving agencies. In most cases, they conduct the research themselves but in a few cases they will commission research from an individual or small group of persons. This, however, is becoming rare.

APPENDIX II

INTENSIVE TRAINING COURSE ON EVALUATION IN EDUCATION, IIEP,
7 January - 1 February 1974

The content for the course was determined by asking the selected candidates what fields of interest were most important to them in their current and future work. From the returned questionnaires, it emerged that the predominant interests were in the areas of systems evaluation and the evaluation of learning materials and procedures. However, some participants expressed an interest in guidance and selection procedures and, to a lesser extent, in the evaluation of school personnel. The detailed timetable given below reflects these emphasists.

The course is comprised of the teaching of strategies of evaluation in all four areas of interest and the presentation of the techniques by which such evaluation is accomplished. In the area of techniques, topics covered will include research design, the theory and practice of sampling, instrument construction, methods of data collection, data processing, statistical analysis and interpretation and report writing.

The learning situations include lectures, discussion groups, practical work, individual consultation with faculty and individual project work. In assisting each participant in the conduct of his current of future work, the individual project work has a special place and provision for it is extended throughout the course.

The course falls naturally into two parts. The first two weeks are devoted to an introduction of the four topics and the beginning of individual assignments. Also during the first two weeks basic ideas in mental measurement, statistical analysis and research design are to be dealt with. The second two weeks continue the presentation of topics and techniques with increased emphasis on system and curriculum evaluation and upon the completion of individual project work. Questionnaire and attitude scale construction are given special attention in these latter two weeks.

Further to this, each participant was requested to select one problem/project with which he would be concerned in the near future and describe this in detail under the following headings:

1. Aim(s) of project (giving also social educational context).
2. Evaluation design.
3. Sampling procedures.
4. Instruments (questionnaires, tests etc.).
5. Data collection
6. Data analysis.
7. Proposed write-up.
8. Problems you face in the work.
9. Facilities at your disposal in general, but particularly for data collection and processing.

A major part of the individual work at the training course was concerned with helping to solve the types of evaluation problems with which each participant would be faced on his return to his country. Indeed, each participant had to write an end-of-course paper dealing with the solution of his problems.

Timetable

Day 1	Session 1	9.15 - 10.45	Welcome by Director. Administrative Announcements. Introduction of Faculty and Participants.
	Session 2	11.15 - 12.45	Description and Explanation of Programme.
	Session 3	14.30 - 16.00	Evaluation for what?
	Session 4	16.30 - 18.00	Discussion.
Day 2	Session 1) Session 2)		Group work to discuss individual project work and preferred reading assignments.
	Session 3		Tasks of identifying and operationalising objectives in four main themes: National systems Curriculum Selection and Guidance School Personnel
	Session 4		Practical work on operationalising objectives.
	Session 5	18.00 - 19.30	Individual consultation.
Day 3	Session 1		Individual consultation or library work.
	Session 2		"Introduction to the measurement of ability and achievement." This will include the concepts of scales of measurement, reliability, error, validity, dispersion and covariation.
	Session 3		Practical exercise.
	Session 4		"Univariate statistics" plus discussion.
Day 4	Session 1		Evaluation of pedagogical aspects of national systems. This will include the notions of efficiency and effectiveness and will deal with wastage (i.e. repetition and drop-out), selection of indices and outcome criteria.
	Session 2		Curriculum evaluation. This will include the identification of different levels of curriculum and provedures and the try-out procedures for a given learning unit.
	Session 3		Group work : Group 1 - Systems Group 2 - Curriculum

	Session 4	Correlation Analysis. This will include product-moment, rank-order, point bi-serial, biserial, tetrachoric and phi (with reference to χ^2).
Day 5	Session 1	Norm and Criterion referenced measures.
	Session 2	Test construction (including item analysis).
	Session 3) Session 4)	Practical exercises and discussion.
Day 6	a.m.	Individual consultation.
Day 7	Session 1	Selection and Guidance
	Session 2	Discussion.
	Session 3) Session 4)	Individual consultation and work.
Day 8	Session 1	Observation and Rating Techniques.
	Session 2	Survey Design.
	Session 3	Experimental Design.
	Session 4	Discussion.
Day 9	Session 1	The conceptualisation and execution of some evaluation projects in developing countries.
	Session 2	Selection of research design for particular contexts. Selected proposals by participants.
	Session 3	Continuation of Session 2.
	Session 4	Individual work.
Day 10	Session 1	Analysis of variance
	Session 2	Introduction to multivariate analysis.
	Session 3	Multiple regression.
	Session 4	Practical exercises.
Day 11	Session 1	Some non-parametric statistics and their applications.
	Session 2	Practical exercises.
	Session 3) Session 4)	Presentation by individual participants on their current or future proposals for research, followed by discussion.

Day 12	Session 1	Models of curriculum evaluation.
	Session 2	Individual consultation and work.
	Session 3	Content analysis, blue-printing and item writing.
	Session 4	Practical exercise on item writing.
Day 13	Session 1	Sampling of target populations (survey and experimental).
	Session 2	Selected presentations on sampling by participants.
	Session 3	Units of item analysis.
	Session 4	Practical exercise - item analysis.
Day 14	Session 1	Questionnaire design.
	Session 2	Practical exercise on questionnaire item writing.
	Session 3	The nature of attitudes and other affective constructs.
	Session 4	Discussion.
Day 15	Session 1) Session 2)	Attitude scale construction, scaling techniques and analysis.
	Session 3	Practical exercise.
	Session 4	Individual consultation.
Day 16	Session 1	Need and methodology of evaluation of technology of learning materials.
	Session 2	Discussion
	Session 3	Individual consultation.
	Session 4	Individual work.
Day 17	Session 1	Introduction to data processing - from reception of data to final analysis. Simple approaches.
	Session	Introduction to data processing - from reception of data to final analysis. Sophisticated approach.
	Session 3	A case study of curriculum evaluation.
	Session 4	Discussion.

Day 18	Session 1) Session 2)	Multiple regression and canonical analysis followed by discussion.
	Session 3) Session 4)	Individual work and consultation.
Day 19	Session 1	Item sampling - Rotation and Rasch.
	Session 2	Discussion.
	Session 3) Session 4)	Individual work and consultation.
Day 20	Session 1) Session 2) Session 3) Session 4)	Participants' presentation of completed project designs plus discussion.
Day 21	Session 1) Session 2) Session 3)	Participants' presentation of completed project designs plus discussion.
	Session 4)	Director's concluding remarks